

for the Revision of the authorized version of the Old Testament; and from the commencement of the work to the day of his death the subject occupied much of his best thoughts and attention.

To the last day of his life also the Professor was occupied with the correction of the proof-sheets of a Lecture "On the Pastoral Office," and his interest in the subjects connected with our noble science continued also to the last unabated, and he expressed only very shortly before he died his admiration of the beautiful spectacle presented by the Moon one evening, and of the planet *Jupiter*. On Thursday, April 29, his mortal remains were laid in the cemetery at Ely, by the side of those of his brother-in-law, the late Dean Peacock.

CHARLES BLACKER VIGNOLES was born at Woodbrook, in the county of Wexford, on the 31st of May 1793, his father, Captain Vignoles, of the 43rd Regiment of Light Infantry, having been stationed in Ireland at that time. Captain Vignoles died of yellow fever at Guadaloupe, in 1794, and his widow survived him only a few weeks. Their only son, a boy but a few months old, was exchanged as a prisoner of war against a young French lieutenant, receiving a commission in the 43rd Regiment by way of recompense for his own orphan condition, and in recognition of his father's merits. In after years he exchanged into the 1st Royals, and was present at the taking of Bergen-op-Zoom, and at the battle of Vittoria.

The youthful Vignoles was placed under the care of his maternal grandfather, Dr. Charles Hutton, F.R.S., Royal Military Academy, Woolwich, by whom his natural talent and bent of mind for scientific pursuits were carefully developed. The ordinary subjects—the *ingenue artes*—of a sound and liberal education were acquired by him more completely than has been the case with many eminent members of the Profession of Engineering, which he afterwards adopted. But his early training in the theory and practice of mathematical calculation, under so eminent an instructor, gave him advantages of which he successfully availed himself in the preparation and working out of those large engineering schemes with which his name is associated. Mr. Vignoles has been heard to say that the computations required for the logarithmic tables published by his grandfather were (under the Doctor's supervision) chiefly undertaken by himself. The effects of such an apprenticeship were an unusual readiness and expertness in calculation, a profound acquaintance with the various systems of notation and measurement both English and foreign, and a singular power of lucid and methodical tabulation of results in all departments of practical science.

Mr. Vignoles made no pretension to be ranked in the list of the more advanced students of astronomy. The needful qualifications for such a position, early acquired experimental skill

and acquaintance with the higher branches of mathematical physics, he did not possess, nor did his active professional life leave him sufficient leisure for their cultivation. It may also be doubted whether his eager and impetuous disposition would at any time have made him a patient technical observer. Like every zealous lover of astronomy, however, Mr. Vignoles possessed an excellent astronomical telescope, which was in tolerably constant use in the grounds of his pleasant marine residence on the banks of Southampton Water.

On two memorable occasions Mr. Vignoles rendered distinguished services to astronomical science. The first was in connection with the now famous voyage to Spain of H.M.S. *Himalaya*, in July 1860, when he co-operated with the Astronomer Royal in organising the expedition, and more especially in providing in every possible way for the comfort of the party on their arrival at Bilbao. Not content with pointing out to the principal members the most favourable spots for observation through the district of the Cantabrian Pyrenees, and placing at their disposal the whole of his large engineering staff, Mr. Vignoles most hospitably received into his own house the Astronomer Royal and his family, M. Otto Struve, Dr. Whewell, late Master of Trinity College, Cambridge, and Lady Affleck, with other distinguished persons who had come from various parts to observe the total eclipse of the Sun on July 18. It should not be forgotten, moreover, that, previous to the sailing of the expedition, Mr. Vignoles had prepared and published, at his own expense, an elaborate map of the Sun's shadow-path over the northern coast of Spain, accompanied by copious topographical and general information of the greatest interest. This was supplemented by the Astronomer Royal's code of instructions, as an appendix, the little volume forming not only an indispensable handbook at the time, but a very pleasing memorial of what has since been considered a most gratifying and successful astronomical expedition.

The second occasion referred to was the occurrence of the total eclipse of the Sun, visible on the south coast of Europe, in December 1870. This expedition, whose head-quarters were to be the little port of Catania, in Sicily, was under the guidance of Mr. Lockyer; but the whole of the arrangements for the overland journey, *viâ* Munich and the Brenner Pass into Lombardy, and thence to Naples, were undertaken and most efficiently carried out by Mr. Vignoles, who was accompanied by his eldest son, Mr. Hutton Vignoles, C.E. It will be remembered that the astronomical party embarked in H.M.S. *Psyche*, which unfortunately struck on a sunken rock within a quarter of a mile of the Sicilian coast, and became a total wreck. Mr. Vignoles was by some years the senior of the party, but there was nothing of the timidity of age in his conduct on that critical occasion.

When the ship had struck, and the water was rapidly rising, Mr. Vignoles was found by his son in the cabin quietly putting

his papers together, and merely remarked, with the coolness of an old traveller, that the same thing had happened to him fifty years before, when his ship was stranded on the Island of Anticosti, at the mouth of the river St. Lawrence. After this untoward event, the smiles of Fortune did not favour the enterprise either by land or sea; but, if the party did not obtain the same success as had crowned previous attempts to observe solar eclipses within the last half-century, it, at any rate, deserved it. Mr. Vignoles and his son were stationed at a convent on the lower slopes of Etna. The preparations, however, were in great measure spoiled by the wretched weather, the Sun being veiled at the moment of obscuration by a blinding storm of sleet and rain, which effectually destroyed all chance of observation in the vicinity of Catania. Those stationed at Syracuse, farther to the south, were, however, more fortunate. The expedition returned home by Malta and the Mediterranean, the voyage being slow and tedious, and the non-arrival of some of the travellers at the expected time caused no little uneasiness to their friends in England.

Mr. Vignoles, till within a few days of his death, continued to take great interest in our Society, and his loss is much deplored. He was an intelligent and useful member, and one of the most regular attendants at our meetings during the long course of years which he has devoted to the general culture and advancement of practical science. He was elected a Fellow on January 9, 1829, and was for many years a member of our Council, and served occasionally as a Vice-President. He was also a Fellow of the Royal Society; and, in 1870, he was chosen to fill the important office of President of the Institution of Civil Engineers.

Of Mr. Vignoles' successful career as a civil engineer it may be sufficient to remark that he is to be credited with the construction of several of the principal railways and other engineering works in the British Isles and on the Continent. Among his railways may be mentioned the Midland Counties, the North Union, the Sheffield, Ashton, and Manchester, the little North-Western and the Dublin and Kingstown. Of the many foreign lines constructed under his supervision his name must continue to be associated, more especially by astronomers, as the engineer of the series of railways in the northern provinces of Spain.

Mr. Vignoles retained his activity of mind to the last. It was a great pleasure to him in his healthy old age to meet his astronomical friends at the monthly meetings of the Society, and on Friday, November 12, only a few days before his death, he attended the dinner of the Astronomical Club, when he appeared, however, to be scarcely in his general health, and retired earlier than usual. The next day he seemed quite himself again, with almost his normal stock of energy and spirits. He left town for his country residence at Hythe, Hants, on the same day; and that night he was seized with apoplexy, from the effects of which he gradually sank, and expired most peacefully in the evening

of the following Wednesday, November 17, 1875, in the eighty-third year of his age.

It may be interesting to add that Mr. Vignoles was a lineal descendant of the last Sieur de Prades, the first of this Huguenot family who came over as a refugee to these islands, and who died in Dublin in the year 1721. Of this exile he was the great grandson.

FRIEDRICH WILHELM AUGUST ARGELANDER* was born at Memel, in East Prussia, on the 22nd March, 1799. His father, who was of Finnish descent, was a merchant of that town, whilst his mother belonged to a German family. Their circumstances were such as enabled them to give their son a very careful training and education. Political events brought him into very early connection with historic names. After the battle of Jena the Prussian royal family left Berlin, and took up their abode for some time at Memel. The Crown Prince (afterwards King Frederick William IV.) resided at the house of Argelander's father, and formed there a strong and lasting friendship with the future Professor. Scarcely less intimate were his relations with Prince William, the present Emperor of Germany.

In due course young Argelander was sent to the gymnasium at Elbing, and in 1813 to the Collegium Fredericianum at Königsberg, from which, in April 1817, he proceeded to the University of that town. Although from the first a diligent student, he did not show any special taste for the science in which he was to become so famous until he was attracted thereto by the lectures of Bessel. This led him to request the latter to entrust him with some calculations for the Observatory. The *Fundamenta Astronomiæ* had then been just completed; but Bessel put into his hands the reduction of the observations of 67 stars observed by himself at Königsberg, and not previously observed since Bradley, and also the determination of the latitude of the Observatory from observations of circumpolar stars. The results of these labours were published in the 5th part of the Königsberg Observations, in which he introduced our late Associate to the scientific world as "one of his most distinguished pupils." Other calculations followed, and it was not long before Argelander took part also in the observations; the first of importance being that of the occultation of the *Pleiades* on the 29th of August 1820. Soon after that, on the 1st of October, he was regularly appointed as Bessel's assistant at the Observatory—the beginning of a career in which he enriched astronomy with results such as could only be obtained by a combination of uncommon genius with industrious zeal.

His first great labour was assisting Bessel in his survey of

* This notice is principally an abstract of that by Prof. Schönfeld in *Vierteljahrsschrift der Astronomischen Gesellschaft*, Jahrgang x, part 3.